REMARKS

This Amendment is filed in response to the Final Office Action mailed on April 12, 2006, and is filed herewith a Request for Continuing Examination. All objections and rejections are respectfully traversed.

Claims 1-58 are currently pending.

Claims 52-58 are added to better claim the invention.

Request for Interview

The Applicant respectfully requests a telephonic interview with the Examiner after the Examiner has had an opportunity to consider this Amendment, but before the issuance of the next Office Action. The Applicant may be reached at 617-951-3067.

Allowable Art

The Examiner objected to claims 38 and 44 as being dependent on a rejected base claim, but allowable if rewritten in independent form including all limitations of the base claim. Claims 38 and 44 are currently amended into independent form and are believed allowable.

Claim Rejections – 35 USC § 102

At paragraph 5 of the Office Action, claims 1-2, 4-5, 7-8, 10, 16-20, 24-26, 28-29,

31 and 33-34 are rejected under 35 U.S.C. §102 as being anticipated by Aguilar et al., US

Patent No. 6,785,807, issued on August 32, 2004, hereinafter Aguilar.

The present invention, as set forth in representative claim 1, comprises in part:

1. A storage server system for a computer having a processor and a memory, the storage server system comprising:
      (A)   a storage operating system adapted to be executed by the processor;
      (B)   a removable nonvolatile memory device coupled to a system bus, the removable nonvolatile memory device containing diagnostics code for the system; and
      (C)   a set of boot instructions resident in the storage server system including instructions for executing a normal boot routine upon a power-on of the system, and *including instructions enabling the processor to identify the removable nonvolatile memory device and to load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine instead of the normal boot routine, the command generated by the storage system upon a failure of the normal boot routine.*

By way of background, Aguilar discloses a data processing system which has a hard-wired ROM and optionally a removable compact flash card. Normally the system boots using the ROM, which is configured to perform "standard boot operations, such as executing a built-in self test (BIST) and loading a BIOS." *See* col. 4, lines 37-43. But, "if the compact flashcard 262 is connected to the compact flash connector 260 when the system is booted," the data processing system will utilize the compact flash card "in lieu of ROM 214 as the source of the bootcode." *See* col. 4, lines 63-67. A diagnostic startup program may be stored on the compact flash card, for engineers to validate the

hardware during the "engineering and manufacturing phases of production." *See* col. 4, lines 67 to col. 5, line 5.

Applicant respectfully urges that Aguilar does not disclose Applicant's claimed novel *including instructions enabling the processor to identify the removable nonvolatile memory device and to load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine instead of the normal boot routine, the command generated by the storage system upon a failure of the normal boot routine.* In further detail, in Applicant's claimed invention, the storage system generates the command upon a failure of the normal boot routine. The command tells the processor to execute a diagnostics boot routine located on the removable nonvolatile memory device. In contrast, Aguilar discloses a boot sequence with a memory address within a compact flash card, the memory address contains the first instruction of diagnostic startup. Aguilar initiates the diagnostic startup based on the compact flash card being connected to the computer upon startup, in contrast to Applicant's claimed invention, where the diagnostic boot up is started by a command generated by the storage system upon a failure of a normal boot routine. There is no disclosure in Aguilar of *the command generated by the storage system upon a failure of the normal boot routine.* Furthermore, Aguilar automatically goes to the compact flash card when connected to the computer and the commands stored on the compact flash card, instead of waiting for a command from the storage system to run a diagnostic routine from the removable non-volatile memory because of a boot-up failure.

Accordingly, Applicant respectfully urges that Aguilar is legally insufficient to anticipate the present claims under 35 U.S.C. §102 because of the absence of the Applicant's claimed novel *including instructions enabling the processor to identify the removable nonvolatile memory device and to load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine instead of the normal boot routine, the command generated by the storage system upon a failure of the normal boot routine.*

Claim Rejections – 35 USC §103

At paragraph 6 of the Office Action, claims 3, 9, 21-23, 27, 30, and 32 were rejected under 35 U.S.C. §103 as being unpatentable over Aguilar, in view of Orr, US Patent No. 6,189,114, hereinafter Orr.

Applicant respectfully notes that claims 3, 9, 21-23, 27, 30, and 32 are dependent claims that depend from independent claims that are believed to be in condition for allowance. Accordingly, claims 3, 9, 21-23, 27, 30, and 32 are believed to be in condition for allowance.

At paragraph 7 of the Office Action, claim 6 was rejected under 35 U.S.C. §103

as being unpatentable over Orr, in view of Aguilar, and in further view of Hitz et al., US

Patent No. 5,963,962, hereinafter Hitz.

The present invention, as set forth in representative claim 6, comprises in part:

6. A server system having a processor and a memory, the server system
comprising:
  (A) a storage operating system adapted to be executed by the
processor;
  (B) a removable nonvolatile memory device coupled to the sys-
tem bus, the removable nonvolatile memory device containing diagnostics
code for the system;
  (C) a set of boot instructions resident in the filer server system
including instructions for executing a normal boot routine upon a power-
on of the system, and *including instructions enabling the processor to
identify the removable nonvolatile memory device and to load the diag-
nostics code into the memory in response to a command to execute a di-
agnostics boot routine instead of the normal boot routine, the command
generated by the storage system upon a failure of the normal boot rou-
tine*;
  (D) a storage adapter coupled to the system bus;
  (E) at least one storage disk coupled to the storage adapter and
containing files served by the operating system; and
  (F) a plurality of storage disks coupled to the storage adapter
and data on the disks being stored in a write anywhere file layout system.

Orr discloses a server (Fig. 1, item 40) remotely managed and controlled by a

controlling computer (Fig. 1, item 10). *See Orr* at col. 4, lines 38-65. The server system

40 has a hardwired flash ROM (Fig. 2, item 50) containing a BIOS (item 60), a Power-

on Self Test (POST) routine (item 62), and containing a diagnostic program (item 64),

which when invoked, performs diagnostic testing of the server system. *See Id.* at col. 3,

lines 2-6 and col. 5 lines 14-31. Prior to booting the server (*see* Fig 5, 102), remote man-

agement software on the controlling computer sets a flag in a CMOS (Fig. 1, item 51)

internal to the server that triggers the POST routine to invoke the diagnostic program. *See Id.* col. 5, lines 56-59.

Hitz discloses:

> "Write Anywhere File-System Layout
> The present invention uses a Write Anywhere File-system Layout (WAFL). This disk format system is block based (i.e., 4 KB blocks that have no fragments), uses inodes to describe its files, and includes directories that are simply specially formatted files. WAFL uses files to store meta-data that describes the layout of the file system. WAFL meta-data files include: an inode file, a block map (blkmap) file, and an inode map (inomap) file. The inode file contains the inode table for the file system. The blkmap file indicates which disk blocks are allocated. The inomap file indicates which inodes are allocated. On-disk and incore WAFL inode distinctions are discussed below." (Col. 5, Lines 35-47)

Applicant respectfully urges that Orr, Aguilar, and Hitz, taken alone or in combination do not teach or suggest Applicant's claimed novel *including instructions enabling the processor to identify the removable nonvolatile memory device and to load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine instead of the normal boot routine, the command generated by the storage system upon a failure of the normal boot routine.* In further detail, Applicant's invention generates a command by the storage system upon a failure of the normal boot routine. The command tells the processor to load the diagnostics code. As stated above, Aguilar does not disclose Applicant's claimed novel *to load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine instead of the normal boot routine, the command generated by the storage system upon a failure of the normal boot routine.*

Additionally, Orr does not disclose or suggest a command generated by the storage system upon a failure of the normal boot routine because Orr discloses an administrator setting a flag prior to power-on self test to enter diagnostic mode. Orr discloses a user set flag compared to Applicant's storage system generating the command to start the diagnostic run. Furthermore, Hitz discloses a WAFL file system, but does not disclose *the command generated by the storage system upon a failure of the normal boot routine.*

None of Orr, Aguilar, or Hitz, discloses Applicant's claimed novel *load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine*, as claimed by Applicant.

Accordingly, Applicant respectfully urges that Aguilar, Orr, and Hitz are legally insufficient to make obvious the present claims under 35 U.S.C. §103 because of the absence of the Applicant's claimed novel *including instructions enabling the processor to identify the removable nonvolatile memory device and to load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine instead of the normal boot routine, the command generated by the storage system upon a failure of the normal boot routine.*

At paragraph 8 of the Office Action, claims 11-15 were rejected under 35 U.S.C. §103 as being unpatentable over Aguilar, in view of Piau et al., US Patent Application Publication No. 2004/0049627, hereinafter Piau, and further view of Maupin et al., US Patent No. 6,477,482, hereinafter Maupin.

The present invention, as set forth in representative claim 11, comprises in part:

11. A method of performing diagnostics in a storage server system, the storage server system having a processor and a memory, the method comprising the steps of:

    (A) providing a removable nonvolatile memory device interfaced with a motherboard, the removable nonvolatile memory device being identifiable to the processor;

    (B) dividing the removable nonvolatile memory device into separate memory partitions;

    (C) storing a set of diagnostics instructions, being a diagnostics code, in one of the partitions of the removable nonvolatile memory device; and

    (D) *programming a system firmware to recognize a user implemented command entered through a command line interface, the command entered during the normal boot routine for a diagnostics boot such that in response to the diagnostics boot command, the firmware loads the diagnostics code residing in the removable nonvolatile memory device into the memory to execute a diagnostic boot routine instead of a normal boot routine.*

Maupin discloses a power button for controlling entry and exit into a diagnostic mode. During boot mode, if the power button is pressed, then the system runs phase 1 of diagnostic mode. The power button is used to exit phase 1. In phase 2, the diagnostic mode runs and the power button can not exit from the diagnostic mode.

Piau discloses a flash memory controller for controlling data transfer procedures between flash memory and a host device. The compact flash contain a plurality of arrays.

Applicant respectfully urges that Aguilar, Piau, and Maupin, taken alone or in any combination, do not teach or suggest Applicant's claimed novel *programming a system firmware to recognize a user implemented command entered through a command line interface, the command entered during the normal boot routine for a diagnostics boot*

such that in response to the diagnostics boot command, the firmware loads the diagnostics code residing in the removable nonvolatile memory device into the memory to execute a diagnostic boot routine instead of a normal boot routine. In further detail, Applicant's invention uses *a user implemented command entered through a command line interface, the command entered during the boot routine ... to execute a diagnostic boot routine instead of a normal boot routine.* The user enterer command is entered through a command line interface. In sharp contrast, Maupin describes pushing the power button to enter phase 1 of the diagnostic and not entering a command in a command line interface. Additionally, Aguilar and Piau are both silent about *a user implemented command entered through a command line interface, the command entered during the boot routine.*

Accordingly, Applicant respectfully urges that Aguilar, Piau, and Maupin are legally insufficient to make obvious the present claims under 35 U.S.C. §103 because of the absence of the Applicant's claimed novel *programming a system firmware to recognize a user implemented command entered through a command line interface, the command entered during the normal boot routine for a diagnostics boot such that in response to the diagnostics boot command, the firmware loads the diagnostics code residing in the removable nonvolatile memory device into the memory to execute a diagnostic boot routine instead of a normal boot routine.*

At paragraph 9 of the Office Action, claims 35, 40, 41, and 46-50 were rejected under 35 U.S.C. §103 as being unpatentable over Aguilar, in view of Beyda et al., US Patent No. 6,012,130, hereinafter Beyda, and in further view of Maupin.

The present invention, as set in representative claim 35, compromises in part:

35. A computer having a processor and a main memory, the computer comprising:

a non-removable non-volatile memory device containing a boot mechanism firmware, the boot mechanism firmware configured to provide a normal boot routine and select a first logical drive to boot from;

a command line interface configured to allow a user to enter a command to run a diagnostic routine; and

a removable non-volatile memory device storing the diagnostic routine, at least a portion of the removable non-volatile memory device configured as a second logical drive, the boot mechanism firmware configured to, in response to the user's command, select the second logical drive to boot from and load the diagnostic routine into main memory.

Beyda discloses a computer exectutable program for automating the upgrade of storage medium such as disk drives. When a CD ROM disk drive replaces an existing drive, the new CD ROM takes the logical name of the existing CD ROM drive.

Applicant respectfully urges that Aguilar, Beyda, and Maupin, taken alone or in any combination, do not teach or suggest Applicant's claimed novel *a command line interface configured to allow a user to enter a command to run a diagnostic routine* and *a removable non-volatile memory device storing the diagnostic routine, at least a portion of the removable non-volatile memory device configured as a second logical drive, the boot mechanism firmware configured to, in response to the user's command entered through a command line interface, select the second logical drive to boot from*

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and load the diagnostic routine into main memory. In further detail, Applicant's invention uses a command line interface for a user to enter a command for the firmware to read from the second logical drive a diagnostic routine. In Applicant's invention, the second logical drive is not replacing the first logical drive but accessible simultaneously.

In contrast, Aguilar does not disclose or suggest a command line interface for a user to enter a command to start a diagnostics routine, as claimed by Applicant.

Furthermore, Maupin uses a power button to start a diagnostics routine. In contrast, Applicant's invention uses a command line interface for a user to enter a command to start a diagnostics routine.

Additionally, Beyda does not disclose using *a command line interface* for a user to enter a command to start a diagnostics routine located within a second logical drive, as claimed by Applicant. Beyda merely discloses a system for updating disk drives.

Accordingly, Applicant respectfully urges that Aguilar, Beyda and Maupin are legally insufficient to make obvious the present claims under 35 U.S.C. §103 because of the absence of the Applicant's claimed novel *a command line interface configured to allow a user to enter a command to run a diagnostic routine* and *a removable non-volatile memory device storing the diagnostic routine, at least a portion of the removable non-volatile memory device configured as a second logical drive, the boot mechanism firmware configured to, in response to the user's command entered through a command line interface, select the second logical drive to boot from and load the diagnostic routine into main memory.*

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At paragraph 10 of the Office Action, claims 36, 39, 42, and 45 were rejected under 35 U.S.C. §103 as being unpatentable over Aguilar, in view of Beyda, further view of Maupin, and in further view of Piau.

At paragraph 11 of the Office Action, claim 51 was rejected under 35 U.S.C. §103 as being unpatentable over Aguilar, and in view of Beyda.

At paragraph 12 of the Office Action, claims 37 and 43 were rejected under 35 U.S.C. §103 as being unpatentable over Aguilar, in view of Beyda, further view of Maupin, and in further view of Austen et al., US Patent No. 6,701,464, hereinafter Austen.

Applicant respectfully notes that claims 36, 37, 39, 42, 43, 45 and 51 are dependent claims that depend from independent claims believed to be in condition for allowance. Accordingly, claims 36, 37, 39, 42, 43, 45 and 51 are believed to be in condition for allowance.

New claims 52-58 are believed to be in condition for allowance because they state *"the second logical drive configured to store a maintenance log generated by the diagnostic routine."* There is no teaching in any of the cited prior art of a second logical on the removable non-volatile memory for storing maintenance logs generated by the diagnostic routine. Accordingly, claims 52-58 should be in condition for allowance.
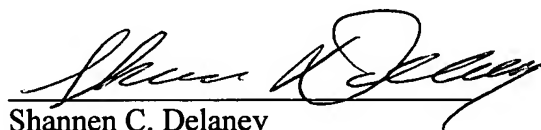
All independent claims are believed to be in condition for allowance.

All dependent claims are believed to be dependent from allowable independent claims.

The Applicant respectfully solicits favorable action.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,

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